Irish District Energy Association

Ireland’s current Long-term Strategy for Greenhouse Gas Emissions Reductions

IrDEA Consultation Response | 07 July 2023

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Public Consultation Response, 07/07/2023

Introduction

IrDEA welcomes the opportunity to contribute to the consultation on Ireland's current Long-term Strategy for Greenhouse Gas Emissions Reductions. With district energy primed to play a leading role in the decarbonisation of heating and cooling in Ireland, the sector is keen to see its potential reflected fully in the Long-term Strategy for Greenhouse Gas Emissions Reductions.

While IrDEA welcomes the addition of the most recent Climate Action Plan 2023 targets to the Strategy, there are several elements in need of refinement to better reflect the future role of district energy in achieving our 2050 net zero emissions targets. This submission sets out those changes in broad terms. Should further information or elaboration be needed on these points, IrDEA would be most happy to provide them, but in the meantime, we wish the team well in producing the finalised Long-term Strategy for Greenhouse Gas Emissions Reductions.

About IrDEA

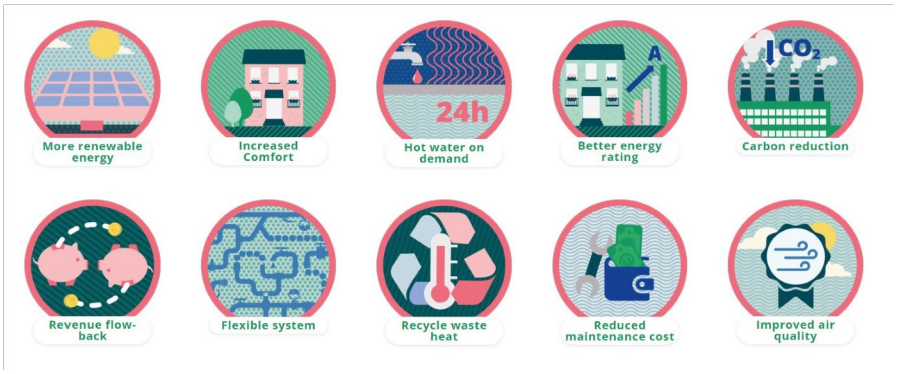
The Irish District Energy Association (IrDEA) was founded in 2017 to promote the development of low-carbon district energy in Ireland. IrDEA currently has 27 member organisations who, between them, boast a range of specialisms including consultancy and technology providers, the public sector, and academia. We are the only association in Ireland dedicated to supporting and representing the interests of the district energy industry.

Countries across Europe with similar climates, populations, and energy systems to Ireland have proven that district energy can deliver sustainable and cost-effective heating to urban areas serving millions of people. There is, however, currently a shortage of knowledge, policy support, capacity, and standards and regulations to facilitate the implementation of large-scale district energy networks in Ireland.

About District Energy

At approx. 60 TWh per annum, heat makes up 42% of final energy demand in a typical year for Ireland (SEAI 2019). Decarbonisation in the sector has, however, trailed electricity, with total fossil fuel-based CO_2 emissions from building and industrial process heating staying around 14.1 $MtCO_2$. This equates to approx. 38% of total energy-related CO_2 and 24% of total national greenhouse gas emissions – natural gas (39%), oil (36%), and coal and peat (25%) (SEAI 2019). We must take significant action to address this to realise Ireland's net zero emissions ambitions.

The Irish District Energy Association (IrDEA) aims to help address this problem by driving the development of the Irish district energy sector. Though relatively new and underdeveloped in Ireland, district heating is well established as means of supplying sustainable heating solutions to industrial, commercial, and residential energy consumers across Europe. With between 54% (SEAI 2022) and 58% (Europa-Universitat Flensburg 2019) of Irish buildings identified as being suitable for district energy, this form of heating is primed to lead the decarbonisation of the sector.



Benefits of district heating[1]

District energy is a proven low-carbon solution for the heating sector, it has existed for over 100 years, and is facilitating the highest shares of renewable heat in Europe.

Dubbed 'central heating for towns and cities', district energy is a network of insulated pipes that delivers heat from a central energy source to provide space heating or cooling and hot water to buildings. It has the flexibility to combine multiple locally available, renewable heat sources and it can also recycle surplus heat from applications such as electricity generation, industrial processes, data centres, wastewater treatment plants, and breweries. As a result, district heating offers economic, environmental, and social benefits, such as lower carbon emissions, reduced maintenance costs, increased comfort, and less fuel poverty.

District energy enables higher shares of renewable heat and lower carbon emissions.

The countries with the highest shares of renewable heat in Europe – i.e., Sweden, Finland, Latvia, Estonia, Lithuania, and Denmark – are also the top six countries in Europe in terms of district heating. Each of these countries has a renewable heat share above 40%, while Ireland has the worst renewable heat share in Europe at 5.3 (SEAI 2002).

Evidence shows 54% of the buildings in Ireland could benefit from district heating.

SEAI's National Heat Study (2022) supplies a comprehensive assessment of the options available to decarbonise Ireland's energy used for heating and cooling homes, businesses, and industry. Published in February 2022, the study shows that up to 54% of Irish buildings could be suitable for connection to district heating networks. This is in line with similar findings from the Irish Heat Atlas developed by Flensburg

[1] (HeatNet NWE, 2021)

University on behalf of the Irish District Energy Association (2020). According to this work, 36% of the heat used for buildings in cities, towns, and villages in Ireland is suitable for district heating technology that is widely deployed across Europe today, with a further 21% of the heat demand capable of being satisfied through more advanced 4th generation district heating, bringing the total predicted potential to 57%.

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The district heating industry is ready to deliver district heating in 10% of buildings by 2030.
Delivering 10% district heating by 2030 will mean the connection of equivalent to 200,000 homes and 2500 public/commercial buildings with low-cost, low-carbon heat. The total investment needed is estimated to be €2.5 billion (€1 billion in public piping and €1.5 billion in homes/supply) for the deployment of the heat networks and associated heat production plants (mostly surplus heat recovery systems). This investment, together with the operation, maintenance, and heat supply to district heating networks would lead to the creation of over 2,000 full-time jobs over the next decade.

This target can be met primarily due to the well-established district heating industry in Europe, which can be used for the rapid roll out of district heating in Ireland. For example, there are already over 70 million people with district heating in Europe, so connecting 2.7 TWhr in Ireland by the end of the decade will require less than 1% of what the industry has already delivered in Europe.

Long-term Strategy for Greenhouse Gas Emissions Reductions

The current long-term strategy intersperses district energy as a source of heat decarbonisation alongside other options, particularly heat pumps. While it is incredibly welcome to see district energy incorporated in this way, we are keen to ensure clarity and consistency in the strategy with respect to decarbonising heating and cooling. This is vital to support the scaling up of the district energy sector, which in turn is essential to achieving our long-term greenhouse gas emissions reduction targets.

Contradictory Elements Regarding Decarbonised Heat

There are some contradictory elements with respect to the decarbonisation of heating and cooling that should be addressed for the sake of clarity. An important example of this can be seen when we compare the section entitled ‘District Heating’ at the end of page 56, which sets out in broad terms an ambition for the rollout of district heating, with the section entitled ‘Planning for the phase-out of fossil fuel heating systems’ on page 57. The latter, *inter* alia, states,

> We will continue to drive the development of the supply chain to support the achievement of our heat pump targets so that the technology will become the default solution for householders in choosing a new heating system in the coming years.

This aim fundamentally undermines efforts to scale up district energy in areas with heat demand densities meriting its use over individual heat pumps. This is disappointing, particularly considering the finding in the

National Heat Study (SEAI, 2022) that approx. 50% of existing buildings are suitable for connection to district heating networks.

Placing heat pump technology above other forms of decarbonised heating and cooling establishes a hierarchy that could damage the potential establishment of a market for district energy in addition to any supports or incentives that may be developed by the state to encourage its roll-out. This poses a market distortion risk from a consumer demand perspective as it will send a message to the Irish public that heat pumps are favoured over district energy, even in areas that would be better served by the latter. It also creates ambiguity from a policy perspective and could act as a barrier to the enactment of policies or legislative instruments that incentivise or demand that district energy be considered for use where it is likely to be the most effective and efficient way of decarbonising heating and cooling of existing and future building stock.

The consequence of setting out that heat pump technology be the default decarbonisation solution for households is ultimately that it could stifle demand and support for the development of district energy, which is needed to reach our climate adaptation goals. IrDEA, therefore, recommends that the sentence quoted above be removed from the document and that any other indication that one heat decarbonisation technology be favoured over others be removed from the long-term strategy. This is vital if we are to ensure all available technologies are deployed to best effect as soon as possible to reach our decarbonisation goals as soon as possible.

Recommendation:

- Amend the sentence on page 57 of the Long-term Strategy to read as follows,

  > We will continue to drive the development of the supply chain to support the achievement of our heat pump targets so that the technology will become the default solution for householders in **low to medium heat density areas when** choosing a new heating system in the coming years.

- Identify and amend or remove any other indication that one heat decarbonisation technology be favoured over others as part of the Long-term Strategy.

  Or

  State that district energy is the preferred option in high heat density areas, with heat pumps being preferred in low to medium heat density areas.

Absence of District Energy from Some Elements of the Strategy

There is a notable absence of a focus on heating and cooling, and lack of mention of district energy in several elements of the Long-term Strategy. For example, Figure 3.1 on page 21 of the Long-term Strategy does not incorporate district energy under either Core Measures of Further Reduction Measures. It is important that this be addressed given that key competing technologies are alluded to, for example within the context of the

electrification of the built environment and the substitution of carbon-based fuels with decarbonised fuels. It is important that district energy be incorporated into all elements of the Strategy to ensure a clear and consistent message is sent to the potential consumer base and those seeking to develop and operate district energy networks.

Recommendation:

Ensure that district energy is incorporated into the Long-term Strategy wherever the decarbonisation of heating and cooling is considered. This must be done to integrate the finding of the SEAI National Heat Study (2022) that approx. 50% of the current building stock is suitable for district energy. To do otherwise would weaken the Strategy and its function in setting out the broad pathway that must be followed to achieve our net zero emissions goals.

Retrofitting and the role of District Energy

It is important that the wording around retrofitting be adjusted to incorporate options for supporting the use of district heating. At present, heat pumps are central to the retrofitting programme. For example, Figure 3.2 states the aim under the 'Built Environment' heading to, 'Retrofit of existing dwellings incl. electrification of water and space heating'. This has implications for the level of retrofitting that must be achieved across the building stock and the heating options that will be supported on a policy and grant funded basis.

Heat pumps most certainly have an important role to play in decarbonising heating in Ireland, but the National Heat Study published in 2022 by the SEAI shows that approx. 50% of the current building stock is suitable for district energy use. This potential must be incorporated into our retrofitting goals if we are to optimise decarbonisation and deliver it as rapidly as needed.

Currently, those availing of the National Retrofitting Programme Grants are incentivised to choose heat pumps as their mode of heat delivery due to the make-up of the grants. This is irrespective of the location the building and the heat density in the surrounding area. As a result of this blanket approach to incentivising heat pump adoption, areas that would be better served by the development of district energy networks may have the viability of those networks undermined by the rollout of large numbers of individual heat pumps that serve to erode district energy demand.

Another drawback of the current linkage between heat pumps and retrofitting is that heat pumps require a deeper level of retrofitting than district energy systems integration generally does. In broad terms, this results in a more resource and time intensive process that slows the overall process of retrofitting and may increase the costs associated. If a more technology agnostic approaches were taken or if district energy were specifically alluded to in the retrofitting goals, it may be possible to speed up and broaden the delivery of effective retrofitting solutions on a district-wide basis. This would help to ensure that the resources and time

needed to deliver heat-pump centric retrofitting could be deployed to works being undertaken on buildings where low heat densities make them the optimal solution, particularly in more rural or remote homes where oil boilers are the dominant heat source.

Time is of the essence when it comes to retrofitting our building stock, and it is important that we ensure our climate goals and strategies provide an opening for the deployment of all available decarbonisation solutions. District energy is one of the key solutions when it comes to the decarbonisation of heating and cooling, and it must be incorporated in all elements of the strategy to both reduce heating and cooling demand and satisfy it from decarbonised sources.

Recommendation:

Disaggregate the inherent linkage between retrofitting and heat pumps to ensure other heating and cooling options are incentivised where most appropriate as part of district level retrofitting initiatives. Provide for decarbonised heating and cooling through means other than electrification where retrofitting is spoken of to ensure that district energy is considered and incentivised for use where heat demand densities justify it as the preferred option.

Conclusion

If we are to achieve net zero emissions, it is vital to use every available technology and resource at our disposal. The science is clear that reducing emissions quickly will have the most positive impact on managing and mitigating the excesses of human induced climate change. As the heating sector lags so far behind in Ireland's efforts to decarbonise, we must put particular focus on finding deliverable solutions that can be rolled out as quickly as possible. This must include placing district energy on a par with solutions like heat pumps given its capacity to deliver decarbonised heat to up to 50% of Ireland's current building stock in addition to future constructions in areas with suitable levels of heat demand.

IrDEA urges that work be done to achieve a balance in the heat decarbonisation pathway needed to achieve Ireland's 2050 net zero emissions targets. We would be very happy to furnish any additional information or materials needed to support that work and wish those working to develop this strategy well.

References

HeatNet NWE. (2021). *Benefits of District Heating*. Https://Guidetodistrictheating.Eu/about/Benefits-of-District-Heating/.

SEAI. (2022). *National Heat Study: District Heating and Cooling*. https://www.seai.ie/publications/District-Heating-and-Cooling.pdf

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